

# Operating Manual



## Hand Welding Unit HG 35-3

with Generator RL35





#### **Disclaimer**

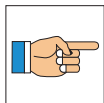
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Our general contractual terms apply in this regard, and reference should also be made to these terms with regard to liability. No industrial property rights of any kind are granted to the user along with this brochure, nor are any assurances made with regard to a licence. Corresponding separate agreements would be necessary for this purpose. The suitability of the products for particular applications may only be checked with our own specialists. The German version of the brochure is binding with regard to accuracy of the information given.

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Version 2.0, gb, Art.-No. 34851

## Note



**This operating manual must be read and observed before unpacking and initial operation of the unit.**

**The unit may exclusively be operated and serviced by persons who know the operating manual and the applicable regulations with regard to industrial safety and prevention of accidents. Repairs may only be carried out through official and certified RINCO departments.**

## Unit-specific information

Adhesive hand unit

Adhesive generator

## Agency



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## Important!

In case of enquiries concerning your unit please state the exact type designation and the unit serial number.

You will find these on the type plates (A) and on the inside of the cover page of this operating manual. The construction and switching mechanism of the unit are consistently further developed and improved and conform with state-of-the-art technology.

RINCO ULTRASONICS AG  
Romanshorn, Switzerland



## Foreword

We are pleased that you have decided to purchase a RINCO product.

We are convinced that you will achieve a maximum of economic efficiency and product quality when using this unit.

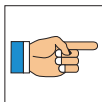
The purpose of this manual is to provide the buyer and user all necessary information for handling, assembly, operation and care of the unit.

It is essential that the information and instructions in this manual are observed in order to ensure that the unit is constantly ready for operation..

# 1 Explanation of symbols and signs

Special attention must be paid to text sections with the following symbols:

## Set-up of the warnings



### ***Note!***

**Information or operating instructions which are especially important for interference-free operation.**



### ***Caution!***

**Describes warnings, the non-observance of which can result in serious injuries or the risk of damage to apparatus parts.**



### ***Danger!***

**Describes warnings, the non-observance of which can result in death or very serious injuries.**

## 2 Safety information

### 2.1 General information

The construction of this unit corresponds with state-of-the-art technology and is safe to operate. The individual modules and the complete unit were tested by our quality control before delivery.

### 2.2 Intended use



This unit is exclusively determined for welding suitable materials. Any other use or use beyond this is deemed as improper use.

The manufacturer shall not be liable for damages caused by improper use. The risk shall be borne solely by the user.

This unit is intended for industrial use!

### 2.3 Improper use

- Operation of the unit with insufficient knowledge regarding operation, service and supervision of the system.
- Carrying out changes and extensions and conversions to the manual unit and generator, which could impair the safety, without the approval of RINCO ULTRASONICS.
- Undertaking changes to the control software!
- Use of unsuitable materials.
- Opening of the generator housing during operation.
- Access to live areas when the unit is switched on.

### 2.4 Important instructions

This operating manual is to be read carefully before initial operation of the unit.

The operating manual is to be kept within reach of the place of use of the unit!

### 2.5 Personnel qualifications

Work with the unit may only be carried out by trained and instructed personnel. The responsibilities of the personnel for operation, equipment, service and repair are to be clearly stipulated by the operator!

The operator must ensure that only commissioned personnel work on the unit.

Work on electrical equipment of the unit may only be carried out by a skilled electrical worker according to the rules of electrical technology. Only trained personnel with knowledge and experience in handling pneumatics may work on pneumatic facilities!

### 2.6 Installation of unit



#### **Danger!**

**Only carry out connection work to the unit when the mains cable is disconnected! It is essential that the mains connection be fitted with an earth connection! Country-specific, statutory safety measures must be observed! In case these regulations are not observed the manufacturer refuses all liability for physical injuries or damages to materials.**

The unit must be in a closed and safe condition before any initial operation.

Only use dry compressed air for operation.

If necessary an upstream air service unit has to be connected.

### 2.7 Operation



#### **Caution!**

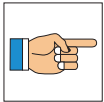
**Do not open the generator or the converter housing during operation.**



### **Danger!**

**There is high voltage in the interior of the unit – risk of injury!**

- Refrain from all methods of working which could pose a risk to safety!
- Only operate the system when all protective facilities and facilities due to safety e.g. detachable protective facilities, sound insulation are available and in good working order.
- Before switching the unit on ensure that no one can be endangered through the unit which is starting.



Skilled operation, careful handling of unit and relevant tools during operation

- maintain the readiness for operation
- increase the service life and
- reduce downtimes to a minimum.

## **2.8 Noise emissions**



### **Caution!**

**Threshold values: Ultrasonic causes no damage according to the present status of knowledge if the maximum level is below 140 dB and the average level, based on an 8 h/day is below linear 110 dB.**

Attention is to be paid to the sub-harmonic, i.e. audible oscillations, which fluctuate sharply depending on the use, and can be disturbing and harmful. Decisive is the continuous sound pressure level, equivalent to energy,  $L_{eq}$  based on a representative work period (min. 8 h/day max. 2000 h/year) from 85–87 dB as threshold.



**The noise level may exceed 70 dB when welding special materials.**

### **Counter-measures:**

- Wear hearing protection
- Mount sound protection hood (option)

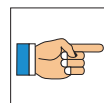
(details according to SUVA information no. 86048 d 4.94)

## **2.9 Warranty statement**

With the delivery of the unit RINCO ULTRASONICS has entered into a guarantee obligation according to VSM (Association of Swiss machine industrial companies).

The pre-requisite for satisfying the warranty conditions by RINCO ULTRASONICS are among others:

- The user must have knowledge of the contents of this operating manual.
- The instructions and warnings contained in this operating manual are to be observed.
- Autonomous conversions or changes to parts of the unit, the oscillator system and the generator are not permitted.



RINCO ULTRASONICS shall be very pleased to explain any points which may be unclear by telephone or provide instructions by skilled workers.



### 3 Transportation



**It is essential to observe transportation instructions on the packaging.**

#### 3.1 Acceptance of delivery

The despatch container for machines and unit can withstand normal strain during transportation by road, rail and air.

After receipt of the consignment you should check whether all parts correspond with the packing list and that there are no visible damages. In case damages are determined, please advise the transport company immediately and store the packaging as evidence.

#### 3.2 Damage during transit

The transportation company is responsible for damages suffered during transportation. A full report, with an exact description of the damages, must be submitted to the transportation company and serves as a basis for the claim for damages. Damages or loss of the goods delivered by us are to be reported to us immediately and confirmed by a copy of the afore-mentioned report. Insofar as delivery is carried out by RINCO ULTRASONICS carriage paid or CIF, the damaged consignment will if applicable be replaced and claims asserted towards the responsible transport insurance.

#### 3.3 Positioning of the unit

The location of the unit is significant. In order to guarantee a long service life the unit should be operated in a clean environment. Attention is to be paid that the electronic appliances are stored vibration-free.

The settings by the plant are carried out at 20° C. The environment temperature can be between 10° to 50° C during use.

## 4 Product information

### 4.1 Product overview/technical data

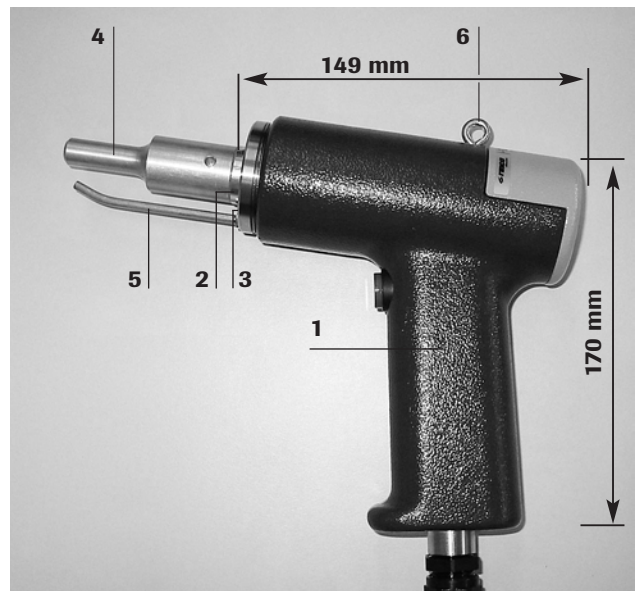
#### 4.1.1 Hand welding unit

##### HG35-3 without Booster

- 1 Handle
- 2 Converter C35-11, gain factor 1:1.5
- 3 Front screw
- 4 Horn (customer-specific)
- 5 Cooling air ducts on the horn
- 6 Hanging clip

Dimensions in mm

Weight 1.1 kg

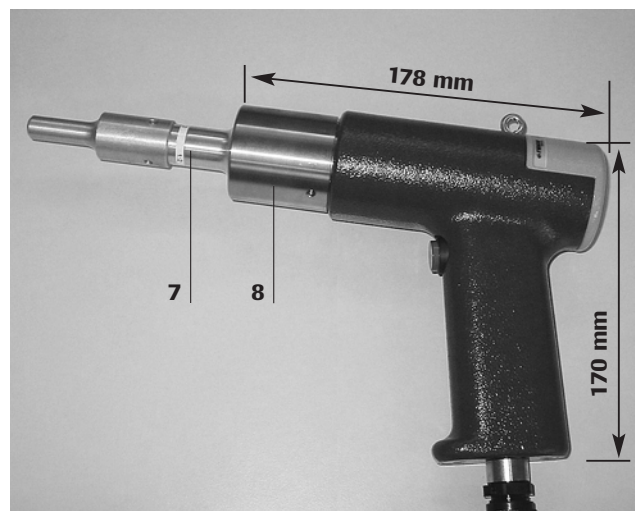


##### HG35-3 with Booster

- 7 Booster body gain factor 1:1.5/1:2
- 8 Converter screw connection and booster support  
Converter C35-10 gain factor 1:1

Dimensions in mm

Weight 1.6 kg



#### 4.1.2 Ultrasonic generator RL35

- 1 Housing
- 2 Generator plug-in module
- 3 Type designation of the plug-in module

Dimensions in mm

Weight: 7 kg

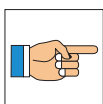
#### 4.1.3 Available generator modules

Type	maximum power output
UGF3 35-250	250 W
UGF3 35-400	400 W
UGF3 35-600	600 W

#### 4.1.4 Connected loads

- 230 V 50–60 Hz
- Option 110 V (to 600 W)
- Maximum current consumption 5 A

#### 4.1.5 Cooling (accessory)

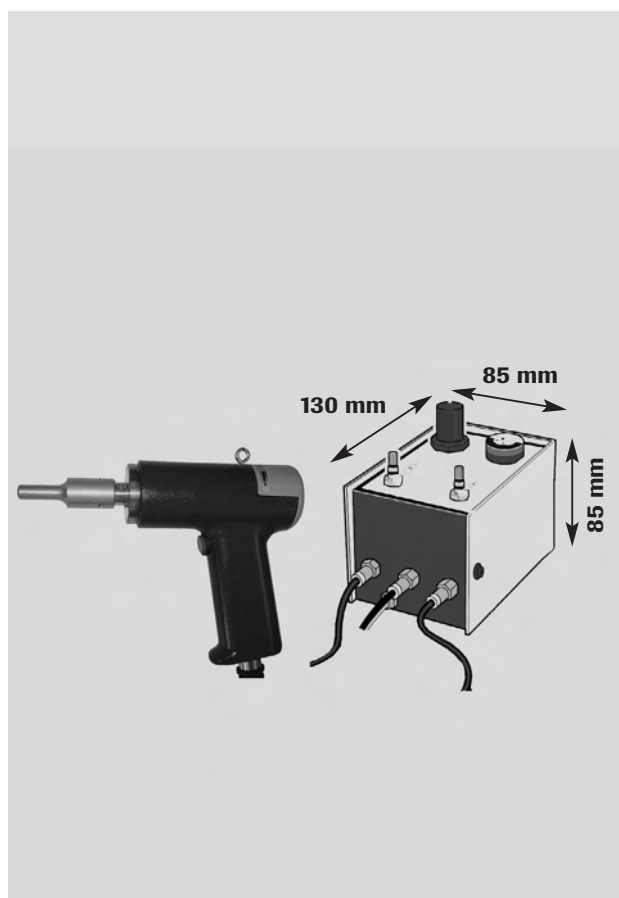
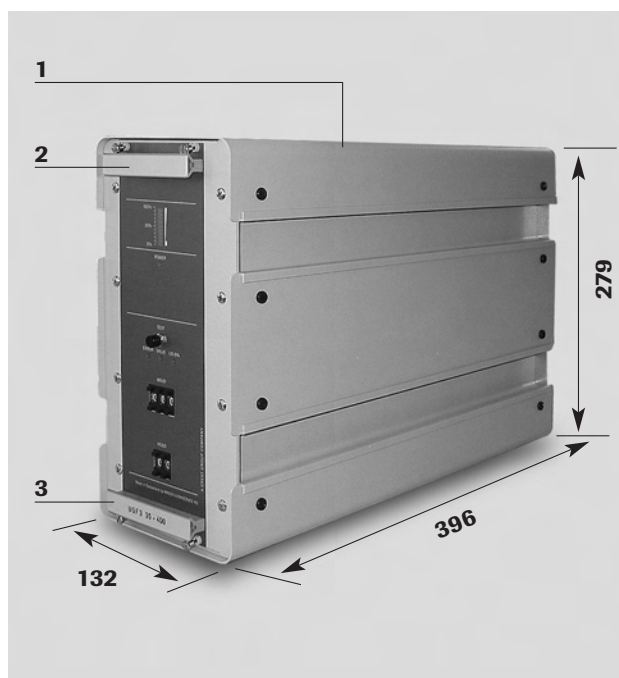


**During high-power applications the unit must be cooled.**

**The illustrated cooling system can be installed later.**

#### Valve box for the specific cooling air duct

Compressed air connection: dry, filtered compressed air, max. 7 bar or 105 psi



## 5 Control and display elements

### 5.1 Hand welding unit

#### 1 Trigger key

Key for activating the ultrasonic.

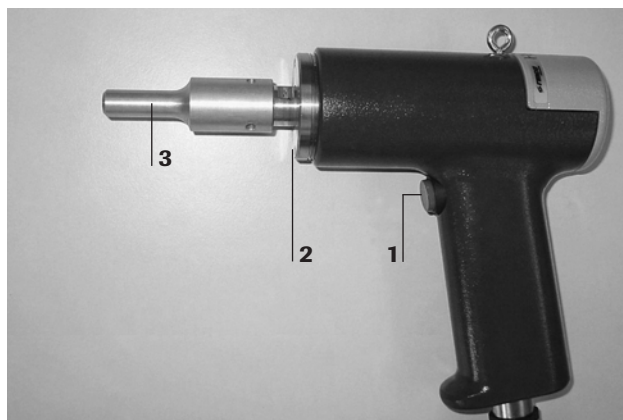
Do not touch the horn when ultrasonic is being emitted!

#### 2 Screw connection for converter

#### 3 Horn



**Never alter the tuned horn by making mechanical changes. This can cause damage to the oscillator system and the generator!**



### 5.2 Valve box (optional)



During use, the temperature on the converter and on the horn may not exceed 50° C. If this temperature is exceeded, they need to be cooled with compressed air.

#### 18 System pressure controller

The system pressure controller serves to set the air pressure. To specify the desired value, pull out the setting adjustment knob. The setting adjustment knob can be moved to the desired position by pressing on it. Maximum connected loads: 7 bar

#### 19 System pressure display

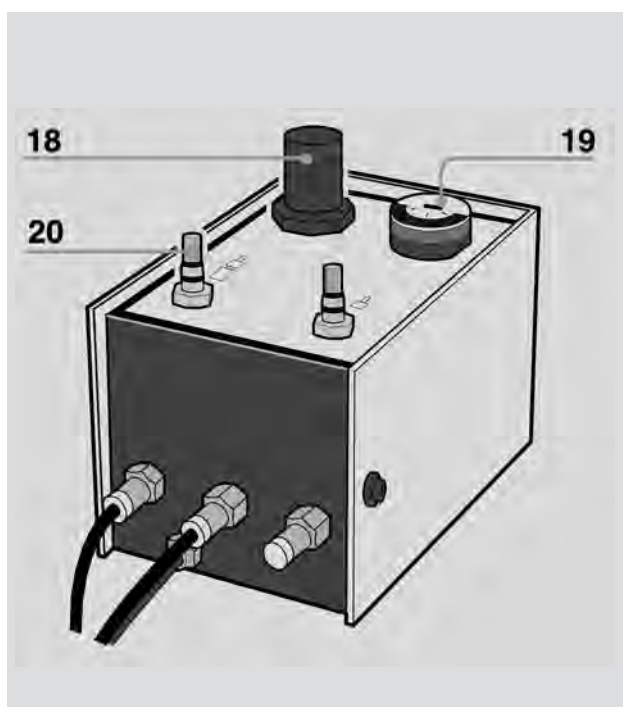
The pressure manometer displays the setting for the maximum cooling air pressure.

#### 20 Cooling air throttle “converter”

With the help of this regulator, the amount of cooling air emitted by the converter can be set. The cooling air flowing out of the converter can be lead to the horn with an appropriate tube. The second throttle serves equipment with separate cooling air ducts.

#### 21 Compressed air feed

Use dry, filtered compressed air with a maximum pressure of 7 bar or 105 psi.



## 5.3 Ultrasonic generator RL35

### 26 Generator module handle

The generator module can be removed using these handles if necessary. The fixing screws for opening the generator module are located above and below the handles.



**Never remove or replace the generator module when it is plugged in (high voltage)! Do not touch the conductor board, condensers charged with high voltage!**

### 27 LED bars

This display shows the power output during the welding sequence. When the horn is not under a load, i.e. swinging freely in the air, the display should not exceed the 25% mark.

If the 100% mark is exceeded an error message occurs.

### 28 "POWER" LED

Operation display

### 29 "US-TEST" key

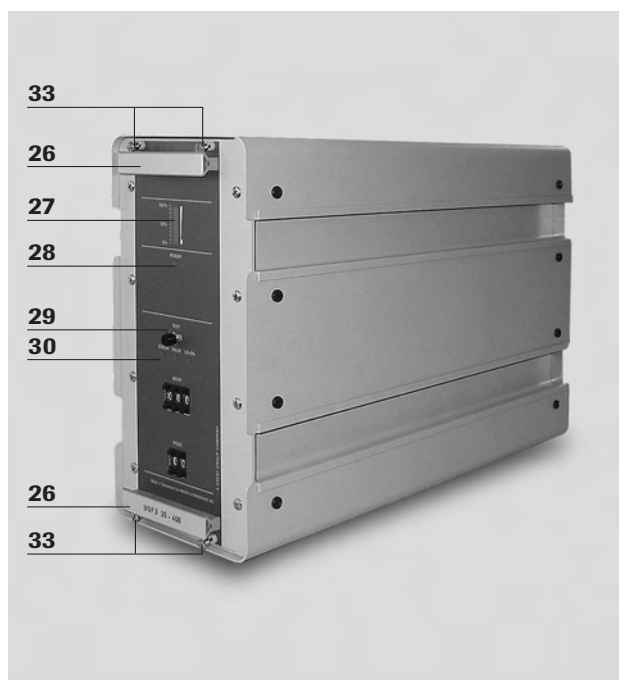
Key for activating the ultrasonic test.



**Do not touch the horn!**

### 30 LED

- "US-ON" ultrasound enabled
- "VALVE" magnetic valve enabled
- "ERROR" error output enabled



### 31 Welding time

Use this key to

- change the welding time.
  - a) Increase the numeric value
  - b) Decrease the numeric value



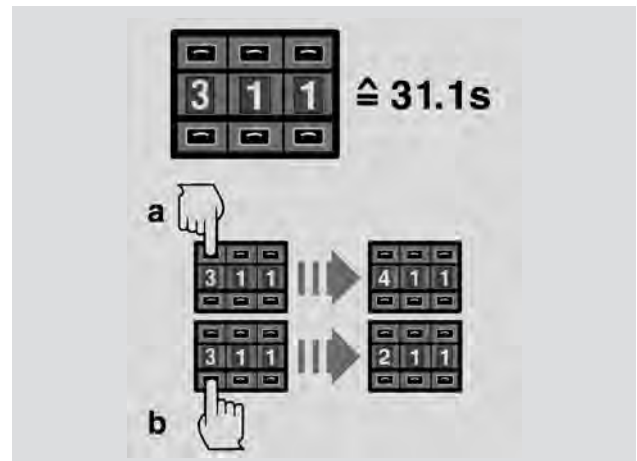
With initialisation on the internal programme selection switch (level 9), according to chapter 7 “Retooling”, the welding time is increased by a factor of 10 (99.9s) and, with the corresponding initialisation, it can be set to switch function “ON-Off”.

### 32 Hold time

This setting is not available for manual units.

### 33 Fixing screws

The fixing screws must be tight during operation!



### 34 Main switch



## 6 Initial operation

### 6.1 Choice of location

Select an operating location for the equipment according to the following criteria:

- Clean surroundings
- Vibration-free resting place for the electronic equipment
- Environmental temperature during operation:  
10° C – 50° C when making settings: 20° C

### 6.2 Setting up and connecting the equipment

Take the following steps to put the equipment into operating condition:

1. Connect the cables between the hand welding unit and the generator.



**Only use a grounded electrical connection!**

2. Insert the unit plug into the socket on the generator:

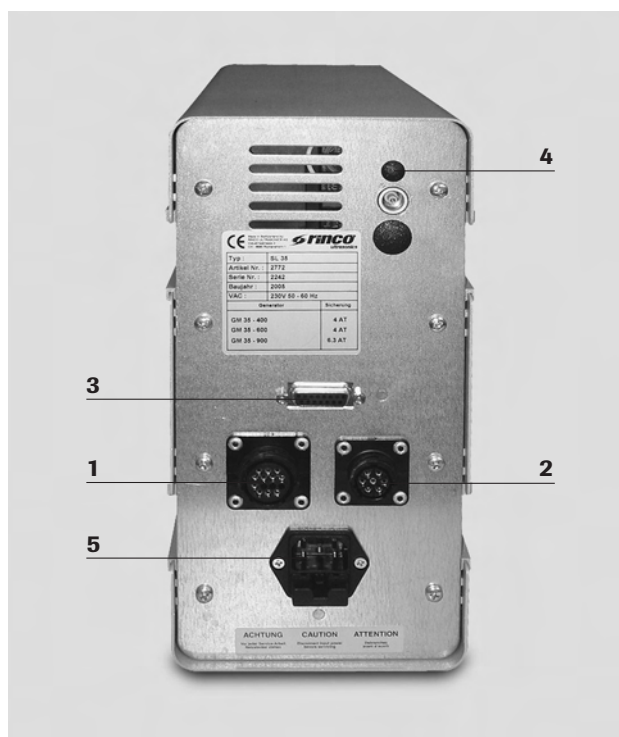
- 1 STO1 no function for manual units
- 2 STO2 trigger socket
- 3 STO3 no function for manual units
- 4 STO4 RF-cable socket
- 5 STO5 Power cord socket

3. Weld tool (horn)

In general, the horn is factory-installed on new equipment. If this is not the case, please follow the installation instructions in chapter 7, “Retooling”.

### 6.3 Initial welding

Normally, the generator is factory-set for the appropriate welding unit. Should, however, changes be necessary, please consult chapter 7 “Retooling”.



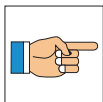


## 7 Retooling

### 7.1 Changing the generator functions

#### 7.1.1 Description of the programme selection switch

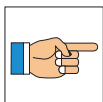
The programme selection switch contains 10 levels that can be set. For US operations without pneumatic tool infeed.



**The standard setting for manual units is “Level 0”.**

##### Level settings

- |          |   |
|----------|---|
| <b>0</b> | Welding time external                                 |
| <b>1</b> | Welding time internal                                 |
| <b>9</b> | Impulse with settable welding time;<br>maximum 99.9 s |



**For the setting “Level 9” the following applies:**

**Press Start 1 once:**

**The ultrasound automatically runs for the pre-set length of time with holding key.**

**Press Start 1 again:**

**The ultrasound is interrupted.**

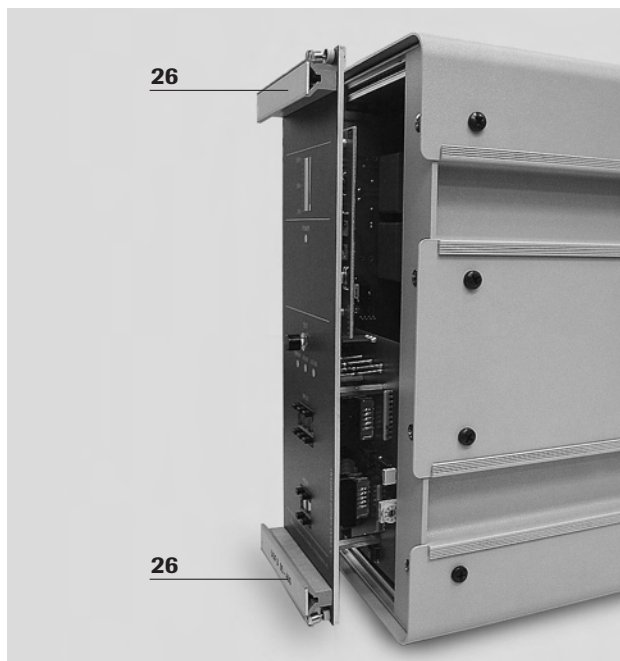
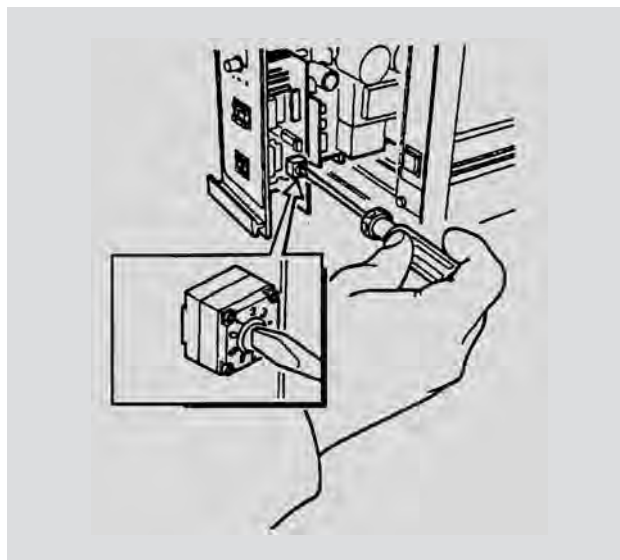
**If the time is set to “00.0”, the ultrasonic is maintained via Start 1.**

#### 7.1.2 Before changing the programme

1. Unplug the unit from the power source.
2. Loosen the four fixing screws (33).
3. Take hold of the handles (26) and pull the module out.



**Before unplugging the RF-cable, make absolutely sure that the power switch on the generator is turned off!**





### 7.1.3 Reprogramming to “after-pulse”

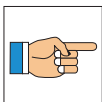
The after-pulse can be activated using a jumper on the mother board. The after-pulse occurs 0.3s after the hold time has elapsed.

**J4** Jumper "Hardware test programme" (only for use within the plant)

**J5** Jumper "US-after-pulse"

**P** Motherboard

The default setting for J4 and J5 is “OFF”.



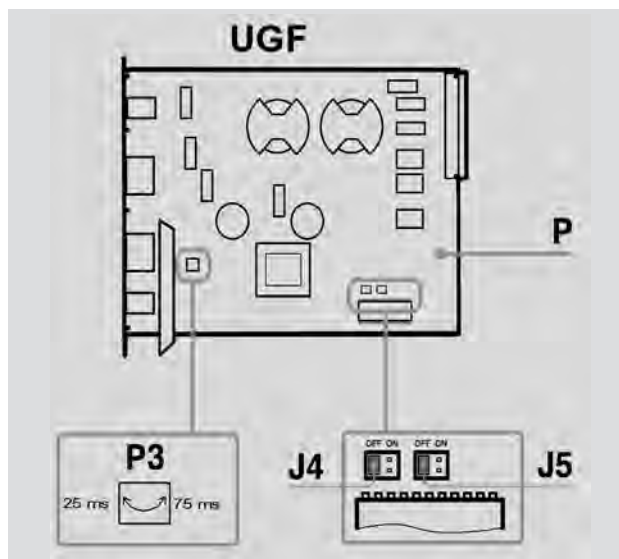
**The time of the after-pulse cannot be changed.**

### 7.1.4 Soft start

The greatest load on the oscillator system occurs during the first oscillation. In order to prevent overloading and the resulting damages, a soft start has been installed in RINCO generators, which has a continuously variable setting from 25ms to 75ms. Your unit is delivered with a setting of 50ms. The soft start of the setting potentiometer (P3) is located on the plug-in module within the housing in order to prevent any unintentional change in the settings. (UGF only)



**Important: Before the plug-in module is switched on again, make absolutely sure that it is correctly and completely reinserted (again flush with the front plate).**



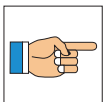
## 7.2 Changing the horn

1. The horn (4) and the converter (3) can be detached from each other by using the open-ended spanner (G, Accessories).

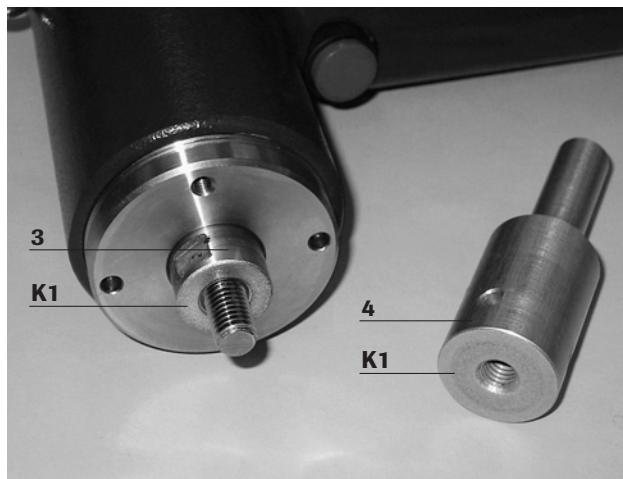
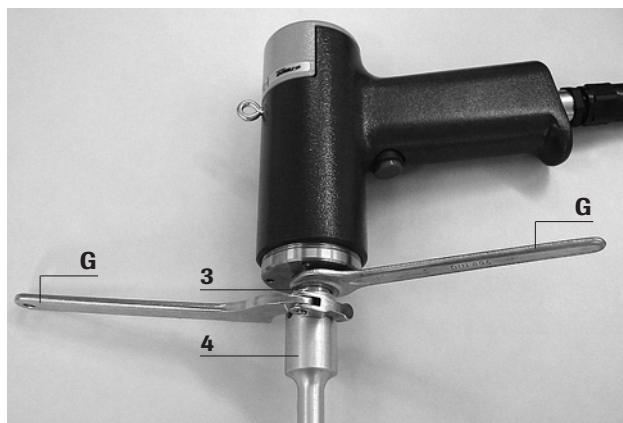


**Never tighten the parts in a vice or similar clamping device!**

2. Before mounting, clean the contact area K1 with a clean rag. Should grooves have developed on both surfaces, please contact the appropriate RINCO service location. Screw the horn on and tighten.



**The horn must be tightened with a torque of 30 – 40 Nm.**



### 7.3 Selecting the amplitude

The amplitude cannot be changed on RL generators.

### 7.4 Amplitude values of the RL generators

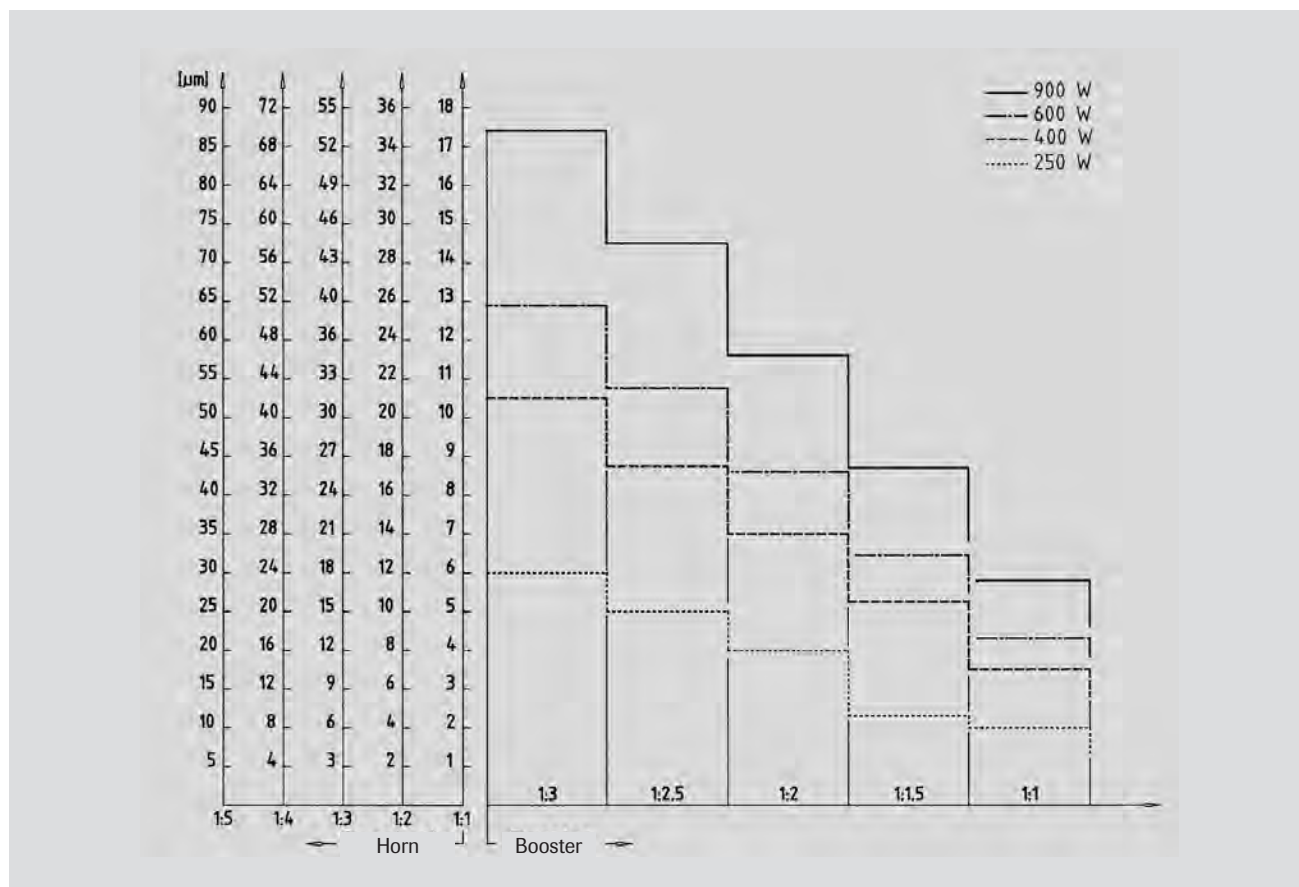
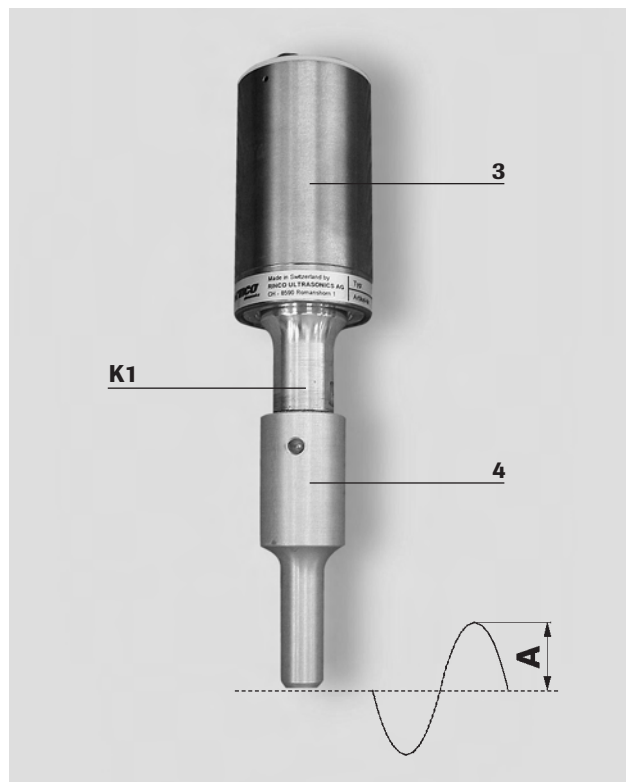
The different generator powers result in different amplitudes. The amplitude values given in the following table refer to the appropriate converter/horn configuration.

The actual welding amplitude can be directly read off in this way.

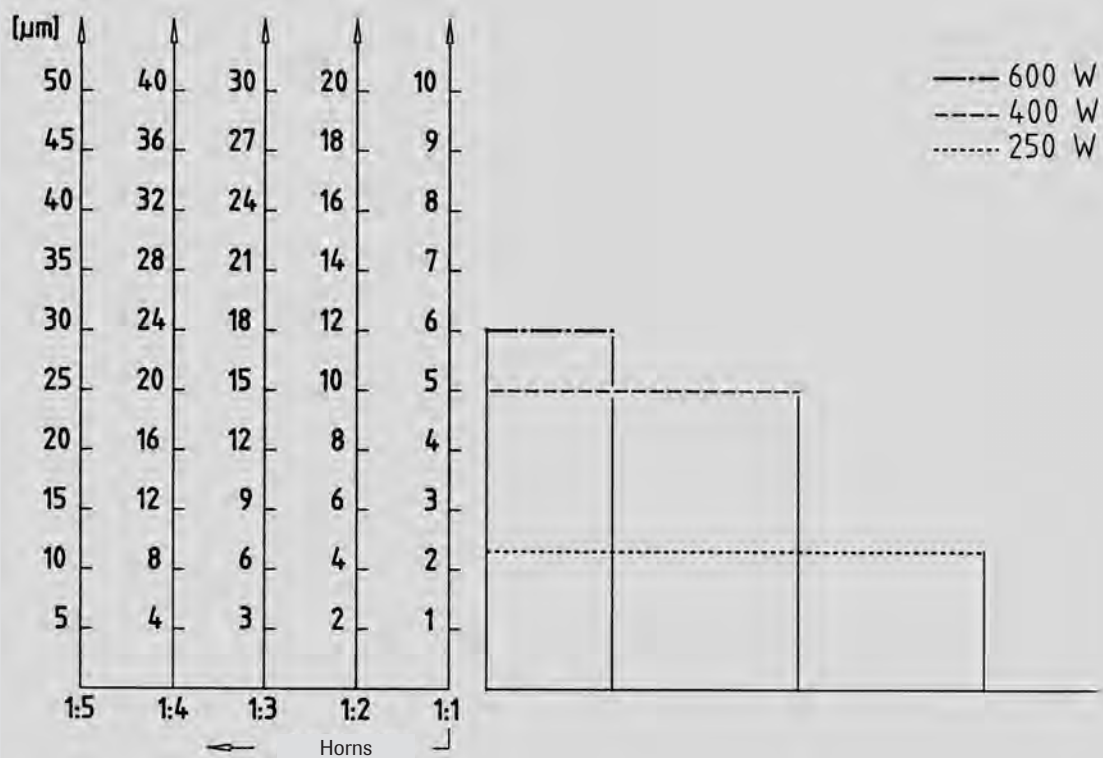
- 3** Converter
- 4** Horn
- A** Amplitude
- K1** Interface

### 7.5 Amplitudes of 35 kHz RL generators

#### 7.5.1 Amplitudes with non-amplified converter C35-10



## 7.5.2 Amplitudes with amplified converter C35-11



## 8 Cleaning and service

### 8.1 General service work



Cleaning and maintenance work may only be carried out by trained personnel.

Before beginning the maintenance work, make sure that all power sources, such as electrical power, are disconnected.

**Attention:** Never clean the keyboard or foil of the generator with acidic cleaners.

### 8.2 Hand welding unit

The hand welding unit requires no special maintenance.

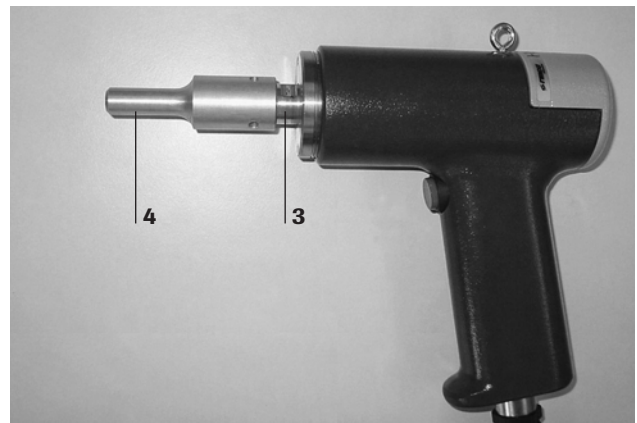
However, regularly cleaning the

- housing (3),
- horn (4),

guarantees a long and problem-free operation of the unit.

### 8.3 Generator

The generator is maintenance-free.



## 8.4 Oscillator system



**Work on the oscillator system (S1) only if the supply voltage is switched off! High-voltage!**

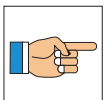
**Avoid contact with the RF socket (RF1) of the hand welding unit.**

**Do not connect any measuring device to the RF socket of the hand welding unit!**

**The built-in transducer contains an electrical charge even after the generator has been switched off!**

## 8.5 Screw connection

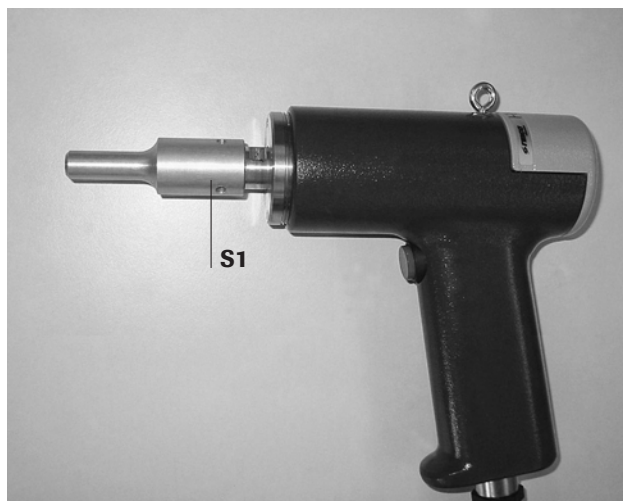
After the horn has been in operation for a longer period of time, disconnect it according to the instructions in chapter 7 “Retooling” and check it for cleanliness.



**Tightening torque: 30 – 40 Nm**

Black spots on the interface **K1** can be cleaned as follows:

1. Clean with an oil-free cleaning agent and a cotton or paper cloth.
2. If the surface is uneven or has grooves, please contact the appropriate service location.

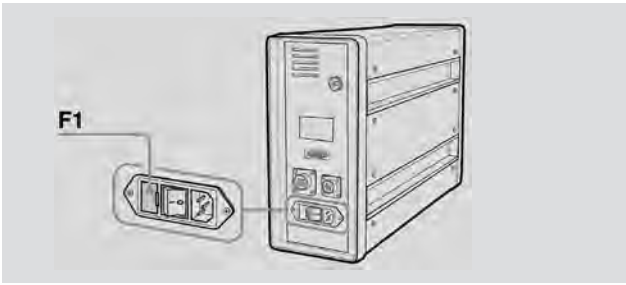


# 9 Internal unit service

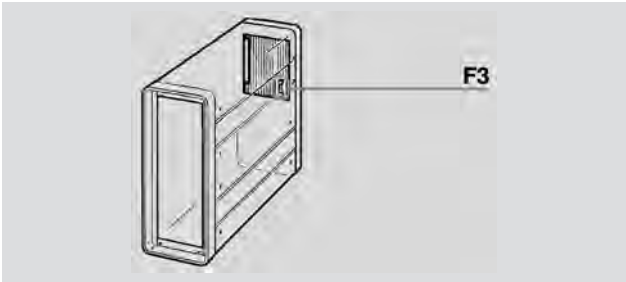
## 9.1 Fuses for generator RL35

Fuses are located in the following component groups:

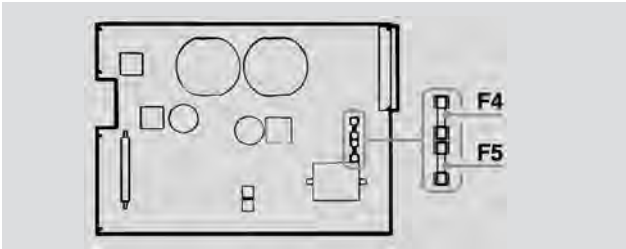
### Power socket



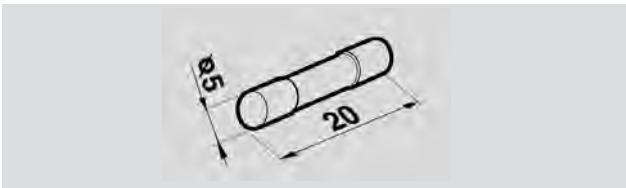
### Print bus



### Generator module



All fuse dimensions: 5 x 20 mm.



## 9.2 List of the fuses for generator RL35

### 9.2.1 Fuses 230 Volt

Generator	Power socket	Busprint	Generator module	
	F1		F4	F5
UGF3 35-250	3.15 A/T	400 mA/T	3.15 A/T	100 mA/T
UGF3 35-400	4 A/T	400 mA/T	4 A/T	100 mA/T
UGF3 35-600	4 A/T	400 mA/T	4 A/T	100 mA/T

### 9.2.2 Fuses 110 Volt

Generator	Power socket	Busprint	Generator module	
	F1		F4	F5
UGF3 35-250-110	6.3 A/T	400 mA/T	6.3 A/T	160 mA/T
UGF3 35-400-110	8 A/T	400 mA/T	8 A/T	160 mA/T
UGF3 35-600-110	8 A/T	400 mA/T	8 A/T	160 mA/T

## 10 Error messages and troubleshooting



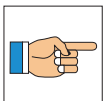
Troubleshooting can only be performed by specially trained personnel. If there are uncertainties, contact the service location or the producer directly.

### 10.1 Error messages and troubleshooting during start

Error	Possible cause	Troubleshooting
Generator does not turn on	<ul style="list-style-type: none"><li>– no power supply</li><li>– Input NOT-STOP interrupted</li><li>– fuse defective</li><li>– module not in housing</li></ul>	<ul style="list-style-type: none"><li>– insert mains plug</li><li>– check the “NOT-STOP” status</li><li>– check F1– F5</li><li>– insert module and screw tight</li></ul>

### 10.2 Error messages from the generator during operation

Error	Possible cause
red LED is blinking (500 ms)	<ul style="list-style-type: none"><li>– maximum weld pressure is too high</li><li>– not enough generator power for desired application</li><li>– defective oscillator system</li></ul>
rote LED leuchtet dauernd	<ul style="list-style-type: none"><li>– no trigger signal within 10 s</li><li>– no US-Stop signal</li><li>– Start 1 was not pressed before the safety switch was reached or the hold time has elapsed</li><li>– Start 2 is missing</li></ul>



If there are three errors in a row, the generator is blocked and must be cleared with the “US-TEST” key.



## 11 Service addresses

The technical customer service of RINCO ULTRASONICS will be pleased to be of assistance in case of technical interferences and welding problems which may occur.

Our customer service requires an exact description of the technical interference or the welding problem to be able to provide serious consultancy.

### **Our Address:**

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CH-8590 Romanshorn 1  
Switzerland

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